



PATENT SPECIFICATION

640,310

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PROVISIONAL SPECIFICATION.

Improvements in Lining Tubes for Artesian Wells.

We, C. ISLER & COMPANY LIMITED, a company organised under the laws of Great Britain, of Bear Lane, Southwark, London, S.E.1, and FREDERICK CHARLES PAGET, British subject, of the Company's address, do hereby declare the nature of this invention to be as follows :—

In artesian well engineering it is common to line the bore hole of the well with a metal tube which at the water level is formed with openings through which water can pass to be taken away through the tube : the tubes are usually protected by a protective coating such as a bitumen but despite this in certain cases, especially where the water level is in a friable bed, difficulty arises in maintaining flow due to the tendency of the perimeter walls of the openings to become corroded and gradually to close up until finally the well becomes either useless or requires re-lining.

Now the present invention, which has for its main object to protect the openings against such corrosion, consists in fitting to the perimeter wall of the openings at least at their inflow sides mask components which are formed of a material selected for its non-corroding properties in the particular circumstances of any particular "site." In general the masks would take the form of apertured inserts which can be fitted or plugged into the openings from the inflow side (and usually the components would have marginal flanges to seat on to the outer surface of the tube.

For the majority of sites the masks or inserts could comprise rubber whether natural or synthetic or a plastic including that known under the Registered Trade Name as "Bakelite."

Rubber is in general the most useful and generally applicable material for use can be made of its natural resilience to enable it to be "sprung" into position in an opening : in one form of insert using this material and adapted to be fitted to openings in the form of relatively long narrow slots with rounded ends and arranged parallel with the axis of a

tube, the insert would comprise a body part of the same form as the openings and having also at one face a marginal flange : the walls of the openings would be tapered so as to decrease the width of the opening in passing from the inner to the outer peripheral wall of the tube and the body of the insert below the flange would be correspondingly tapered, i.e. the width of the body of the insert increases as it recedes from the flange.

The insert would be provided with one or more through passages permitting the inflow of water and while the form of these passages may vary depending on the shape of the insert they would in the case of the strip form of insert described comprise a series of slots in line along the length of the insert : whatever form the passages take, they would preferably decrease in cross-section towards the inflow end.

The depth of the body of the insert below the flange would preferably be somewhat smaller than the thickness of the wall of the tube and the bituminous protective coating would be carried from the inner periphery of the tube over the wall of the opening up to the inner end of the insert. The protective coating on the outer periphery of the tube would extend up to the periphery of the opening so that the flange of the insert would seat against the coating.

It will be clear that to equip a liner tube with these inserts, it is necessary merely to spring them into the openings before the tube is fitted to the bore hole of a well. For the purpose of protecting the ends of the flanges against damage while the tube is being fed into the bore hole, the tube could have at the region of the leading end of each opening a bead formed on it conveniently by a deposit of weld metal, the bead being so disposed as to extend about (i.e. in advance of) the leading end of the flanges of the insert and to be slightly proud of it.

It is to be understood that the tube would comprise in the usual manner a number of sections which are secured together as they

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are passed into the bore hole and the sections which will "face" to the water bed will have a series of openings each fitted with a mask or insert.

In those installations in which it is desirable or necessary to provide a pebble filter, thus involving the fitting within the first tube of a second tube providing between itself and the outer tube an annulus to receive the pebbles, the openings in the second tube may also be fitted with masks as well as are the openings of the outer tube.

The invention enables the material of the metal tube to be selected with reference to

its cost and availability while the fitting of the masks or inserts to the openings affords the metal adequate protection against corrosion: thus the tube can be of mild steel as is usual but without incurring the defects which arise when that metal is used.

Dated this 13th day of January, 1948.

R. F. COWLING,  
Chartered Patent Agent,  
Bank Chambers,  
329, High Holborn, London, W.C.1.

## COMPLETE SPECIFICATION.

### Improvements in Lining Tubes for Artesian Wells.

We, C. ISLER & COMPANY LIMITED, a company organised under the laws of Great Britain, of Bear Lane, Southwark, London, S.E.1., and FREDERICK CHARLES PAGET, British Subject, of the Company's address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

In artesian well engineering it is common to line the bore hole of the well with a metal tube which at or below the water level is formed with flow openings through which water can pass to be taken away through the tube: the tubes are usually protected by a protective coating such as bitumen but despite this in certain cases, especially where the water level is in a friable bed, difficulty arises in maintaining flow due to the tendency of the perimeter walls of the openings to become corroded and gradually to close up until finally the well becomes either useless or requires re-lining. It has also been proposed to cover the entire surface of a metal lining tube with a rubber covering for the purpose of affording protection against corrosion, the covering extending over the peripheral edges of the flow openings in the tube.

The main object of this invention is to provide for the protection against corrosion of a lining tube in a manner which is simple and readily applied.

According to the present invention there are provided insert pieces which are formed of a material which is non-corroding in the particular circumstance in which a lining tube is to be used, and these pieces are dimensioned to fit snugly in the flow openings in a lining tube, and the insert pieces themselves having within their boundary one or more flow openings. Each insert may comprise a body part to fit snugly into a flow opening and a marginal flange

part to seat upon the outer surface of a tube about the opening in it. Preferably the body part of each insert piece is tapered, and in such a case the flow openings in the tube would themselves be tapered, the body part of the insert pieces being dimensioned to be sprung into position in such openings.

It will be obvious that this invention enables the material about a flow opening in a lining tube to be readily protected by the fitting of these separate insert pieces. The invention includes within its scope not only the insert pieces but also a lining tube when fitted with such pieces.

For the majority of sites the insert pieces could comprise rubber whether natural or synthetic or a plastic including that known under the Registered Trade Mark as "Bakelite."

Rubber is in general the most useful and generally applicable material for use can be made of its natural resilience to enable it to be "sprung" into position in a flow opening.

The invention is illustrated in the accompanying drawing in which Figure 1 represents diagrammatically a typical arrangement of lining tubes for an artesian well, Figures 2—3 are elevations of certain of the component parts of that tube and Figures 6—8 are views to a larger scale of the arrangement according to the invention.

Referring firstly to Figure 1, a lining tube comprises a number of sections which are secured together as they are passed into the bore hole: certain of these sections are plain tubes, e.g., the sections 1, while others have flow openings 2 formed in their wall: the disposition along the length of the sections of these openings will depend upon the circumstances at any particular boring and as an illustration there is employed a lowermost section 3 shown in Figure 2 which has no openings at its lower end but a

number towards the end where it is joined to the next section 4 which, as is shown in Figure 3 is, like one or more sections 4 following it, provided with openings 2 along its entire length: the sections 4 are followed by a section 5 which has openings 2 for part only of its length to continue at one end the openings 2 in the preceding section 4 and which has no openings 2 for the remainder of its length to continue a blank part of a tube 6 which as shown in Figure 5 has openings 2 for part only of its length: in Figures 2—5 only some of the openings are shown, it being understood that other openings are provided between the chain dotted lines indicated.

Now, this invention is concerned with protecting the openings 2 against corrosion and for this purpose, each opening 2 is masked by an insert piece 7 which fits into the intake sides of the openings 2 and is itself formed with a flow opening 8. In the particular arrangement illustrated the openings 2 are in the form of a long narrow slots extending parallel with the length of the sections and having rounded ends and accordingly the insert pieces are in the form of long narrow strips and are preferably formed with a number, three as shown, of the openings 8: as is shown it is preferred to decrease the width of these openings 8 towards the inflow end.

In general the insert pieces would be formed of a material such as rubber and comprise a body part 9 which can be sprung into the openings 2 and a marginal flange 10 which seats against the outer surface of the tube or more precisely against the usual bituminous coating 11 which is applied to the tube. The walls of the openings 2 would be tapered as shown in Figure 8 so as to decrease the width of the opening in passing from the inner to the outer peripheral wall of the tube and the body 9 of the insert piece below the flange 10 would be correspondingly tapered i.e. the width of the body of the insert piece increases as it recedes from the flange.

The depth of the body 9 of the insert piece below the flange 10 would preferably be somewhat smaller than the thickness of the wall of the tube and the bituminous protective coating would be carried from the inner periphery of the tube over the wall of the opening up to the inner end of the insert piece. The protective coating on the outer periphery of the tube would extend up to the periphery of the opening so that the flange of the insert piece would seat against the coating.

It will be clear that to equip a lining tube with these insert pieces it is necessary merely to spring them into the openings 2 before the tube is fitted to the bore hole of a well. For the purpose of protecting the ends of the

flanges against damage while the tube is being fed into the bore hole, the tube could have at the region of the leading end of each opening a bead 12 formed on it conveniently by a deposit of weld metal, the bead being so disposed as to extend about (i.e. in advance of) the leading end of the flanges 10 of the insert and to be slightly proud of it.

In those installations in which it is desirable or necessary to provide a pebble filter, thus involving the fitting within the first tube of a second tube providing between itself and the outer tube an annulus to receive the pebbles, the openings in the second tube may also be fitted with insert pieces as well as are the openings of the outer tube.

The invention enables the material of the metal tube to be selected with reference to its cost and availability while the fitting of the insert pieces to the openings affords the metal adequate protection against corrosion: thus the tube can be of mild steel as is usual but without incurring the defects which arise when that metal is used.

What we claim is:

1. For protecting against corrosion the walls of the flow openings in a lining tube, an insert piece formed of non-corroding material and dimensioned to fit snugly in an opening in a lining tube, the insert piece having within its boundary one or more flow openings.

2. An insert piece as claimed in Claim 1 and formed with a body part to fit snugly into the opening and a marginal flange part to seat upon the outer surface of a tube.

3. An insert piece as claimed in Claim 2 and adapted for lining tubes having flow openings of tapered form, the body part of the insert piece being tapered and dimensioned to be sprung into an opening.

4. A lining tube having flow openings each fitted with an insert piece as claimed in any of Claims 1—3.

5. A lining tube as claimed in Claim 4 and which is provided at its outer surface with a bead extending about the leading end of each insert piece.

6. For fitting in a flow opening in a lining tube an insert piece substantially as described with reference to Figures 6 and 7 of the accompanying drawing.

7. A lining tube fitted with insert pieces substantially as described with reference to the accompanying drawing.

Dated this 13th day of January, 1949.

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[This Drawing is a reproduction of the Original on a reduced scale.]

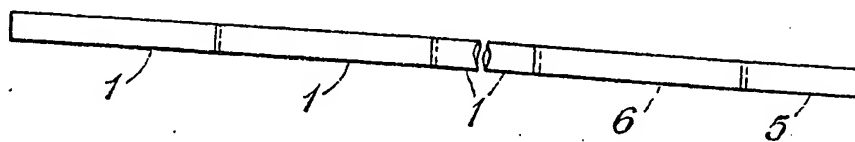


FIG. 2.

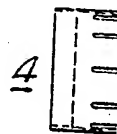
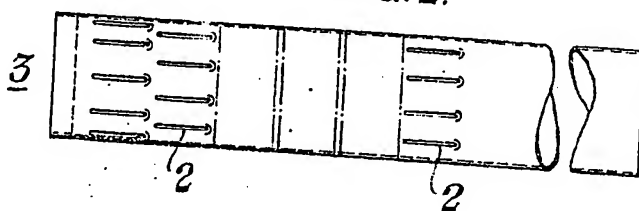


FIG. 4.

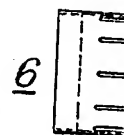
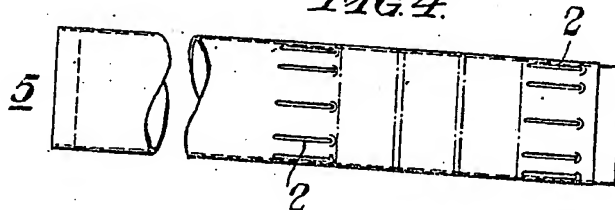
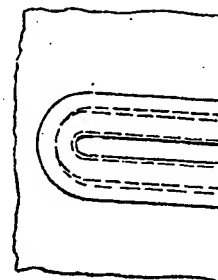
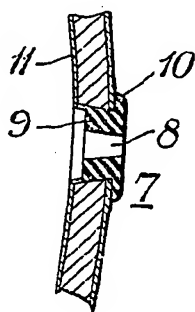
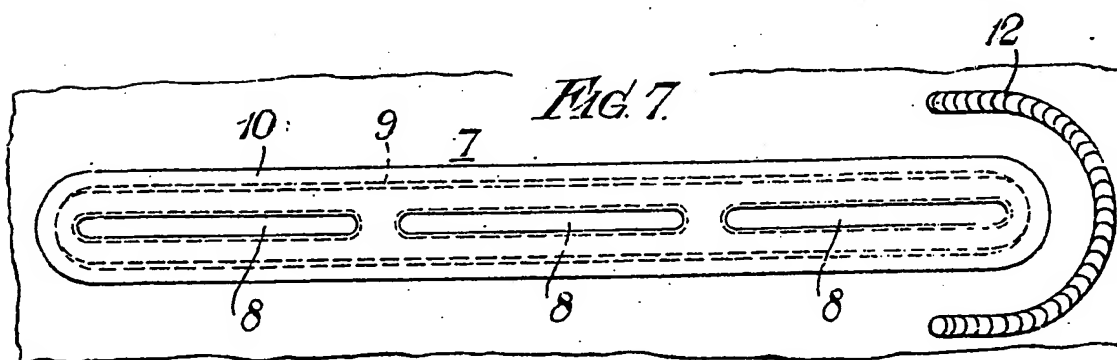
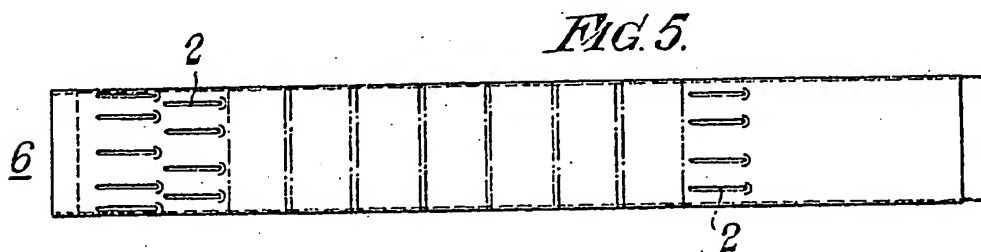
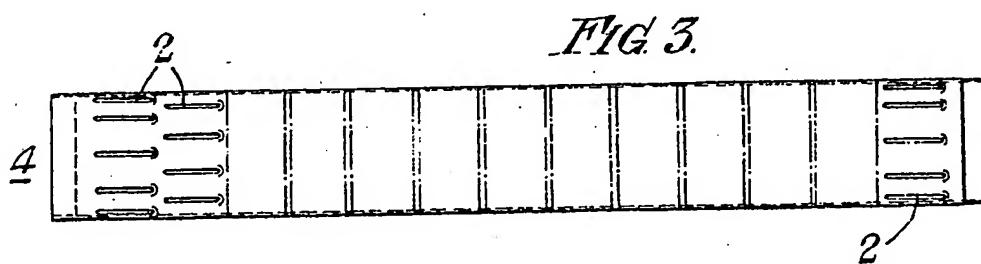
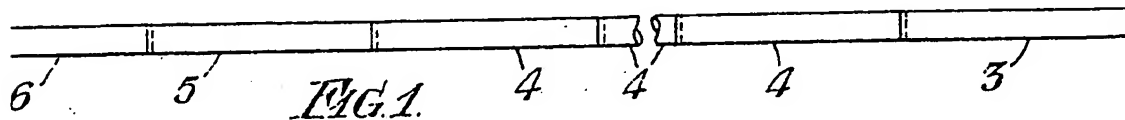


FIG. 6.

FIG. 8.





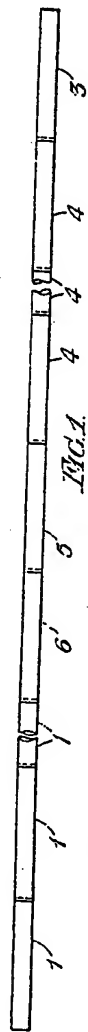


Fig. 1.

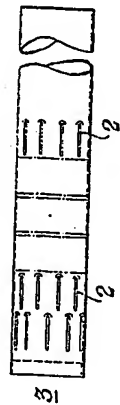


Fig. 2.

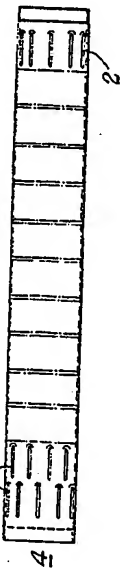


Fig. 3.

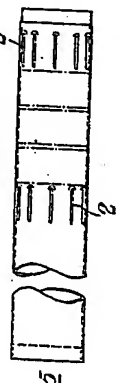


Fig. 4.



Fig. 5.

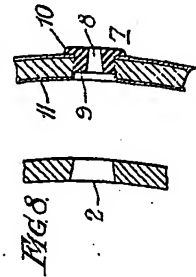


Fig. 6.

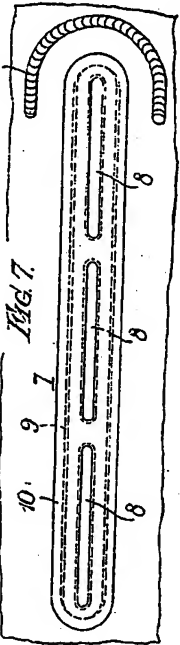


Fig. 7.

[This Drawing is a reproduction of the Original on a reduced scale]